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Date: October 11, 2010 /Robin Wardzala/
Robin Wardzala

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s):	Sumantra Chakravarty, et al.	Examiner:	Rhonda L. Murphy
Serial No:	10/788,729	Art Unit:	2462
Filing Date:	February 26, 2004		

Title: SUPPRESSING CROSS-POLARIZATION INTERFERENCE IN AN ORTHOGONAL COMMUNICATION LINK

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

Dear Sir:

Further to the Notice of Appeal, filed August 11, 2010, Appellants' representative submits this brief in connection with an appeal of the above-identified patent application. As the above noted Notice of Appeal acts to reinstate a prior appeal, which was withdrawn by the Examiner, and, further, as a Brief with accompanying fee was properly submitted in connection with the prior appeal, it is submitted that no additional fee is required in connection with this Brief. However, in the event any additional fees may be due, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [QUALP825US].

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Qualcomm Incorporated, the assignee of the patent application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 are pending in the application. Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 stand rejected by the Examiner. The rejection of claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 is being appealed.

IV. <u>Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))</u>

Amendments to claims 1, 7, 15, 20, 26, and 29 were presented, to address informalities, in the Reply to Final Office Action, filed on April 22, 2010. In the Advisory Action, dated June 11, 2010, it is noted that the amendments were entered for the purposes of appeal. Accordingly, the claim appendix attached hereto reflects these amendments.

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

Independent Claim 1

Independent claim 1 relates to a method for reducing cross-polarization interference in a wireless communication system (*See*, for example, paragraph 27), comprising: generating first data to be transmitted from a first transmission terminal (*See*, for example, paragraphs 27 and 28); encoding the first data with a long code at the first terminal to produce a first long-encoded signal (*See*, for example, paragraphs 33 and 34); applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal (*See*, for example, paragraph 35); generating second data to be transmitted from a second transmission terminal (*See*, for example, paragraphs 27 and 28); encoding the second data with the long code at the second terminal to produce a second long-encoded signal (*See*, for example, paragraphs 33 and 34); applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal (*See*, for example, paragraph 35); and transmitting the first and second long-encoded, polarized signals from the first and second transmission terminals, respectively, to at least one destination (*See*, for example, paragraph 38).

Independent Claim 8

Independent claim 8 relates to a method of demodulating first data transmitted from a first transmission source and second data transmitted by a second transmission source (*See*, for example, paragraph 48), the first data transmitted as a first long-encoded, polarized communication signal having a first polarization and the second data transmitted as a second long-encoded, polarized communication signal having a second polarization (*See*, for example, paragraphs 27, 28, and 33-35), the method comprising: receiving the first and second long-encoded, polarized communication signals (*See*, for example, paragraph 49); separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal (*See*, for example, paragraph 49); applying a long code to the first and second long-encoded communication signals to produce first and second decoded signals (*See*, for example, paragraph 51); applying a first orthogonal code to the first decoded signal to produce the first data (*See*, for

example, paragraph 52); and applying a second orthogonal code to the second decoded signal to produce the second data (*See*, for example, paragraphs 52 and 53).

Independent Claim 15

Independent claim 15 relates to a computer-readable storage medium having computer usable instructions stored thereon for execution by a processor (*See*, for example, paragraphs 70 and 74-76) to perform a method comprising: encoding first data with a long code at a first terminal to produce a first long-encoded signal (*See*, for example, paragraphs 33 and 34); applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal (*See*, for example, paragraph 35); encoding second data with the long code at a second terminal to produce a second long-encoded signal (*See*, for example, paragraphs 33 and 34); applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal (*See*, for example, paragraph 35); and transmitting the first and second long-encoded, polarized signals from the first and second terminals, respectively, to at least one destination (*See*, for example, paragraph 38).

Independent Claim 18

Independent claim 18 relates to a system configured to reduce cross-polarization interference (*See*, for example, paragraph 24 and Fig. 1), comprising: a first terminal (*See*, for example paragraph 24 and 110 of Fig. 1), comprising: a first data generator for generating first data (*See*, for example, paragraph 27); a first long code generator for generating a long code (*See*, for example, paragraphs 33 and 34); a first mixer for encoding the first data with the long code to produce a first long-encoded signal (*See*, for example, paragraphs 33 and 34); and a first polarizer for applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal (*See*, for example, paragraphs 36-38); a second terminal (*See*, for example paragraph 24 and 120 of Fig. 1), comprising: a second data generator for generating second data (*See*, for example, paragraph 27); a second long code generator for generating the long code (*See*, for example, paragraphs 33 and 34); a second mixer for encoding second data with the long code to produce a second long-encoded signal (*See*, for example, paragraphs 33 and 34); and a second polarizer for applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal (*See*, for example, paragraphs 36-38); and a transmitter for transmitting the first and second long-encoded, polarized signals from the

first and second terminals, respectively, to at least one destination (*See*, for example, paragraph 38).

Independent Claim 20

Independent claim 20 relates to a receiver, comprising: an antenna for receiving first and second long-encoded, polarized communication signals (*See*, for example, paragraphs 24 and 49); an ortho-mode transducer for separating the first and second long-encoded, polarized communication signals based on their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal (*See*, for example, paragraph 49); a first mixer for applying a long code to the first long-encoded communication signal to produce a first decoded communication signal (*See*, for example, paragraphs 50 and 51); a second mixer for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal (*See*, for example, paragraph 53); a third mixer for applying a first orthogonal code to the first decoded signal to produce the first data (*See*, for example, paragraphs 52*)*; and-a fourth mixer for applying a second orthogonal code to the second decoded signal to produce the second data (*See*, for example, paragraph 53).

Independent Claim 21

Independent claim 21 relates to a transmission system comprising: means for encoding first data with a long code at a first terminal to produce a first long-encoded signal (*See*, for example, paragraphs 33 and 34); means for applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal (*See*, for example, paragraph 35); means for encoding second data with the long code at a second terminal to produce a second long-encoded signal (*See*, for example, paragraphs 33 and 34); means for applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal (*See*, for example, paragraph 35); means for transmitting the first long-encoded, polarized signal to a receiver; and means for transmitting the second long-encoded, polarized signal to the receiver (*See*, for example, paragraph 38).

Independent Claim 26

Independent claim 26 relates to a receiver for demodulating first and second long-encoded, polarized communication signals transmitted from respective first and second

transmission sources (*See*, for example, paragraphs 38-43 and Fig. 3), the receiver comprising: means for receiving the first and second long-encoded, polarized communication signals (*See*, for example, paragraph 49); means for separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal (*See*, for example, paragraph 49); means for applying a long code to the long-encoded communication signals to produce a first decoded communication signal (*See*, for example, paragraph 51); means for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal (*See*, for example, paragraphs 51 and 53); means for applying a first orthogonal code to the first decoded communication signal to produce the first data (*See*, for example, paragraph 52); and means for applying a second orthogonal code to the second decoded communication signal to produce the second data (*See*, for example, paragraphs 52 and 53).

VI. Grounds of Rejection to be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Whether claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 are unpatentable under 35 U.S.C. §103(a) in view of Shattil (U.S. 7,593,449).

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

A. Rejection of Claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 under 35 U.S.C. §103(a)

1. The Cited Art Relied on by the Examiner

Shattil provides transmission protocols based upon carrier interferometry (CI), wherein the transmission protocols provide interference rejection, reduce multipath fading, and operation across discontinuous frequency bands. (*See* Abstract). CI is a class of multicarrier processing techniques that use sets of phase shifts to overlay and separate data streams that are redundantly modulated onto the same sets of carrier signals. (*See* col. 4, lines, 34-42). CI achieves benefits of both narrowband processing and wideband processing. (*See* col. 4, lines 43-44). Narrowband processing is simpler than wideband processing and certain processing techniques are more effective and more easily performed on narrowband signals. (*See* col. 4, lines 44-50). Wideband processing, however, provides benefits associated with frequency diversity. (*See* col. 4, lines 54-54).

CI avoids multipath interference problems of both wideband and narrowband signals while appearing like a conventional transmission protocol. (*See* col. 4, lines 62-64). Inter-symbol interference occurs when a reflected signal travels a distance greater than a distance traversed by a line-of-sight signal, causing a delay longer than the duration of a data symbol. CI avoid inter-symbol interference by transmitting data symbols on narrowband carriers having long symbol durations to ensure that multipath delay does not exceed the symbol duration. (*See* col. 4, line 65 to col. 5, line 6).

CI avoids multipath fading by redundantly modulating each data symbol onto multiple carriers that are adequately separated with respect to frequency. Redundant modulation typically reduces bandwidth efficiency. (*See* col. 5, lines 9-14). CI avoids reduced bandwidth efficiency by modulation 2N coded data symbols on each of N carriers. Conventionally, multiple signals occupying the same frequency band and same time interfere with each other. (*See* col. 5, lines 15-20). CI avoids increased interference by exploiting interferometry to orthogonalize data symbols modulated on the same carriers. Interference on each carrier cancels when the carriers

are combined. Desired signals are separated by interfering signals via superposition. (*See* col. 5, lines 21-26).

In one example, Shattil discloses CI techniques employed with a DS-CDMA system. For instance, Shattil discloses a CI/DS-CDMA transmitter overview, a CI/DS-CDMA receiver overview, and an implementation of such transmitters and receivers. (*See* col. 37, line 61 to col. 48, line 20; Figs. 14A and 14B; and col. 48-line 40 to col. 51, line 33; Figs. 16A-16G).

As disclosed in Shattil, a user's transmission signal is expressed by:

$$s^k(t) = b_k \sum_{i=0}^{N-1} \beta_i^k h(t - kT_c)$$

where b_k is a data bit for the kth user, β_i^k is an ith value of a spreading sequence corresponding to the kth user, *h(t)* represents a CI-based chip, and T_c is a chip duration. Shattil discloses that the speading sequence is a direct-sequence code and may represent a long code, a Walsh code, a Gold code, a Kasami code, a Barker code, a CI code, a wave code, etc. (*See* col. 38, lines 4-26). Shattil further discloses that differences in users' codes provide for separation of users. (*See* col. 36, lines 58-54). Shattil discloses that different data streams are encoded onto different CI codes. (*See* col. 76, line 67 to col. 77, line, 1).

2. *The Examiner's Rationale*

In the Final Office Action, dated February 22, 2010, it is contended that Shattil teaches encoding first data with a long code at a first terminal to produce a first long encoded signal and encoding second data with the long code a second terminal to produce a second long encoded signal at, col. 49, lines 51-59. It is further noted in the Final Office Action, that Shattil, in the passage cited above, does not explicitly disclose a long code. Accordingly, col. 32, lines 4-7 of Shattil, which mentions a long code, is relied upon.

In the Advisory Action, dated June 11, 2010, arguments presented in the response to the Final Office Action are disregarded for relying upon passages not cited by the Examiner. Further, in the Advisory Action, it is maintained that the above noted passages (e.g., col. 49, lines 51-59), teaches encoding first data from a first transmission terminal and second data from a second transmission terminal with a same long code since, col. 49, lines 51-59, discloses "each code symbol may be provided to each of a plurality of transmitters."

3. *Appellants' Rebuttal*

a. <u>The cited art fails to teach or suggest all aspects of independent claims 1, 8, 15, 18, 20, 21, and 26</u>

Independent claim 1 recites, in part, "*...encoding the first data with a long code at the first terminal to produce a first long-encoded signal...*" and "*...encoding the second data with the long code at the second terminal to produce a second long-encoded signal...*" Similarly, independent claim 15 recites, in part, "*...encoding first data with a long code at a first terminal to produce a first long-encoded signal...*" and "*...encoding second data with the long code at a second terminal to produce a second long-encoded signal...*" Independent claim 18 recites, in part, "*...a first terminal, comprising...a first mixer for encoding the first data with the long code to produce a first long-encoded signal...*" and "*...a second terminal, comprising...a second mixer for encoding second data with the long code to produce a second long-encoded signal...*" Further, independent claim 21 recites, in part, "*...means for encoding first data with a long code at a first terminal to produce a first long-encoded signal...*" and "*...means for encoding second data with the long code at a second terminal to produce a second long-encoded signal...*"

Shattil fails to teach or suggest encoding first data from a first transmission terminal and second data from a second transmission terminal with a same long code. Rather, as described above, Shattil discloses separate codes for different users or different data streams. (*See*, for example, col. 36, lines 58-54 and col. 76, line 67 to col. 77, line, 1). Shattil nowhere discloses first data at a first terminal and second data at a second terminal being encoded with the same long code as provided in independent claims 1, 15, 18, and 21.

As mentioned supra, it is contended, in the Final Office Action and the Advisory Action, that the above noted features is taught by Shattil at col. 49, lines 51-59. The cited passage states:

> The carrier generator 1606 may distribute codes corresponding to each data symbol across multiple transmitters. For example, *each transmitter of an array may transmit a different code symbol corresponding to the same data symbol*. Preferably, the code symbol is generated from a CI code or CI/DS-CDMA code. *Each code symbol may be provided to each of a plurality of transmitters to generate a different beam pattern or sub-space channel corresponding to each code symbol*. (emphasis added)

The cited passage clearly states that different codes can be distributed across multiple transmitters. In particular, a single data symbol can be coded with different codes to produce a

plurality of code symbols, respectively provided to disparate transmitters of an array of transmitters. In another example, the above passages notes that a single code symbol can be distributed to and transmitted by each of a plurality of transmitters. Thus, the cited passage discloses different codes applied to a single data stream to provide multiple streams with different codings, or, transmitted code symbols of a single data stream via multiple transmitters. However, the above passage clearly does not teach or suggest encoding first data from a first transmission terminal and second data from a second transmission terminal with the same long code. Accordingly, it is clear that the cited art fails to teach or suggest all aspects of independent claims 1, 15, 18, and 21.

Independent claim 8 recites, in part, "*...separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal;* ***applying a long code to the first and second long-encoded communication signals to produce first and second decoded signals****...*" Similarly, independent claim 20 recites, in part, "*...a first mixer for applying a long code to the first long-encoded communication signal to produce a first decoded communication signal; a second mixer for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal...*" and independent claim 26 recites, in part, "*...means for applying a long code to the long-encoded communication signals to produce a first decoded communication signal; means for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal...*"

As described supra, Shattil fails to teach or suggest two communication signals from two separate users employing an identical long code. Rather, Shattil discloses distinct codes for different users. In addition, Shattil fails to disclose receiving and processing such communications signals. In particular, Shattil fails to teach or suggest applying a long code on a first communication signal and applying the same long code on a second communication signal. Rather, as discussed above, Shattil discloses different codes applied to a single data stream to provide multiple streams with different codings, or, transmitted code symbols of a single data stream via multiple transmitters. (*See* col. 49, lines 51-59).

In the Final Office Action, col. 47, lines 19-26, are cited as allegedly teaching the features of independent claims 8, 20, and 26 recited above. The cited passage states:

> The symbol decoder 1228 may generate or otherwise be provided with at least one CI code, binary direct-sequence code, spreading code, channel code, encryption code, time and/or frequency-hopping code, pulse-position modulation code, etc. The symbol decoder 1228 may perform de-multiplexing, de-spreading, and/or converting at least one signal from one phase space to another phase space.

The cited passage describes that a symbol generator can be provided with a code, which is employed for de-multiplexing, de-spreading, and/or conversion. However, the above passage clearly does not teach or suggest applying a long code on a first communication signal and applying the same long code on a second communication signal. Accordingly, it is clear that the cited art fails to teach or suggest all aspects of independent claims 8, 20, and 26.

b. <u>The rejection of claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 should be reversed since the cited art fails to teach or suggest all features of the claims.</u>

As discussed above in sub-section 1(a), Shattil fails to teach or suggest all features of independent claims 1, 8, 15, 18, 20, 21, and 26. In addition, Shattli fails to teach or suggest all features of claims 2, 3, 7, 13, 17, 21, 22, 23, 25, and 29, due to, at least, the virtue of their dependency to claims 1, 8, 15, 18, 20, 21, and 26. Accoridngly, it is requested that rejection of claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 be reversed.

VIII. Conclusion

For at least the reasons provided in detail above, the claims currently under consideration are believed to be patentable over the cited art. Accordingly, it is respectfully requested that the rejections of claims 1-3, 7, 8, 13, 15, 17, 18, 20-23, 25, 26, and 29 be reversed.

Respectfully submitted,

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IX. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. A method for reducing cross-polarization interference in a wireless communication system, comprising:

generating first data to be transmitted from a first transmission terminal;

encoding the first data with a long code at the first terminal to produce a first long-encoded signal;

applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal;

generating second data to be transmitted from a second transmission terminal;

encoding the second data with the long code at the second terminal to produce a second long-encoded signal;

applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal; and

transmitting the first and second long-encoded, polarized signals from the first and second transmission terminals, respectively, to at least one destination.

2. The method of Claim 1, further comprising:

orthogonalizing plural sub-channels of each of the first and second data by applying respective plural mutually distinct Walsh codes in each sub-channel.

3. The method of Claim 2, wherein the orthogonalizing step includes:

applying different Walsh codes to different respective data originating from different respective users of the communication system.

4-6. (Cancelled)

7. A communication method including the transmission method of Claim 1 and further comprising:

receiving the first and second long-encoded, polarized signals;

separating the first long-encoded, polarized signal from the second long-encoded, polarized signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal; and

applying the long code to the first and second long-encoded communication signals to produce the first and second data.

8. A method of demodulating first data transmitted from a first transmission source and second data transmitted by a second transmission source, the first data transmitted as a first long-encoded, polarized communication signal having a first polarization and the second data transmitted as a second long-encoded, polarized communication signal having a second polarization, the method comprising:

receiving the first and second long-encoded, polarized communication signals;

separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal;

applying a long code to the first and second long-encoded communication signals to produce first and second decoded signals;

applying a first orthogonal code to the first decoded signal to produce the first data; and

applying a second orthogonal code to the second decoded signal to produce the second data.

9-12. (Cancelled)

13. A communication method including the demodulating method of Claim 8 and further comprising:

encoding the first data with the long code at the first transmission source to produce the first long-encoded communication signal;

applying the first polarization to the first long-encoded communication signal to produce the first long-encoded, polarized communication signal;

encoding the second data with the long code at the second transmission source to produce the second long-encoded communication signal;

applying the second polarization to the second long-encoded communication signal to produce the second long-encoded, polarized communication signal; and

transmitting the first and second long-encoded, polarized communication signals from the first and second transmission sources, respectively, to at least one destination at which the demodulating method is performed.

14. (Cancelled)

15. A computer-readable storage medium having computer usable instructions stored thereon for execution by a processor to perform a method comprising:

encoding first data with a long code at a first terminal to produce a first long-encoded signal;

applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal;

encoding second data with the long code at a second terminal to produce a second long-encoded signal;

applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal; and

transmitting the first and second long-encoded, polarized signals from the first and second terminals, respectively, to at least one destination.

16. (Cancelled)

17. A computer-readable storage medium having computer usable instructions stored thereon for execution by a processor to perform a method comprising:

receiving first and second long-encoded, polarized communication signals;

separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal;

applying a long code to each of the first and second long-encoded communication signals to produce first and second decoded data;

applying a first orthogonal code to the first decoded signal to produce the first data; and

applying a second orthogonal code to the second decoded signal to produce the second data.

18. A system configured to reduce cross-polarization interference, comprising:

a first terminal, comprising:

a first data generator for generating first data;

a first long code generator for generating a long code;

a first mixer for encoding the first data with the long code to produce a first long-encoded signal; and

a first polarizer for applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal;

a second terminal, comprising:

a second data generator for generating second data;

a second long code generator for generating the long code;

a second mixer for encoding second data with the long code to produce a second long-encoded signal; and

a second polarizer for applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal; and

a transmitter for transmitting the first and second long-encoded, polarized signals from the first and second terminals, respectively, to at least one destination.

19. (Cancelled)

20. A receiver, comprising:

an antenna for receiving first and second long-encoded, polarized communication signals;

an ortho-mode transducer for separating the first and second long-encoded, polarized communication signals based on their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal;

a first mixer for applying a long code to the first long-encoded communication signal to produce a first decoded communication signal;

a second mixer for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal;

a third mixer for applying a first orthogonal code to the first decoded signal to produce the first data; and

a fourth mixer for applying a second orthogonal code to the second decoded signal to produce the second data.

21. A transmission system comprising:

means for encoding first data with a long code at a first terminal to produce a first long-encoded signal;

means for applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal;

means for encoding second data with the long code at a second terminal to produce a second long-encoded signal;

means for applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal;

means for transmitting the first long-encoded, polarized signal to a receiver; and

means for transmitting the second long-encoded, polarized signal to the receiver.

22. The system of Claim 21, further comprising:

means for orthogonalizing the first data; and

means for orthogonalizing the second data.

23. The system of Claim 22, wherein each of the means for orthogonalizing comprises:

means for applying different Walsh codes to different respective data originating from different respective users of the transmission system.

24. (Cancelled)

25. A communication system including the transmission system of Claim 21 and further comprising:

means for receiving the first and second long-encoded, polarized communication signals;

means for separating the first and second long-encoded, polarized communication signals based on their respective polarizations to produce a first long-encoded signal and a second long-encoded signal, respectively; and

means for applying the long code to the received first and second long-encoded communication signals to produce the first and second data;

means for applying a first orthogonal code to the first decoded signal to produce the first data; and

means for applying a second orthogonal code to the second decoded signal to produce the second data .

26. A receiver for demodulating first and second long-encoded, polarized communication signals transmitted from respective first and second transmission sources, the receiver comprising:

means for receiving the first and second long-encoded, polarized communication signals;

means for separating the first long-encoded, polarized communication signal from the second long-encoded, polarized communication signal in accordance with their respective polarizations to produce a first long-encoded communication signal and a second long-encoded communication signal;

means for applying a long code to the long-encoded communication signals to produce a first decoded communication signal;

means for applying the long code to the second long-encoded communication signal to produce a second decoded communication signal;

means for applying a first orthogonal code to the first decoded communication signal to produce the first data; and

means for applying a second orthogonal code to the second decoded communication signal to produce the second data.

27-28. (Cancelled)

29. A communication system, including the demodulating system of Claim 26 and further comprising:

means for encoding first data with the long code at a first terminal to produce a first long-encoded signal;

means for applying a first polarization to the first long-encoded signal to produce a first long-encoded, polarized signal;

means for encoding second data with the long code at a second terminal to produce a second long-encoded signal;

means for applying a second polarization to the second long-encoded signal to produce a second long-encoded, polarized signal;

means for transmitting the first long-encoded, polarized signal from the first terminal to a receiver; and

means for transmitting the second long-encoded, polarized signal from the second terminal to the receiver.

30. (Cancelled)

X. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

XI. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.